

HIGH ASPECT RATIO CONTACT STRUCTURE WITH REDUCED SILICON CONSUMPTION

Abstract of the Disclosure

5 A high aspect ratio contact structure formed over a junction region in a silicon substrate comprises a titanium interspersed with titanium silicide layer that is deposited in the contact opening and directly contacts an upper surface of the substrate. Silicon-doping of CVD titanium, from the addition of SiH₄ during deposition, reduces consumption of substrate silicon during the subsequent silicidation reaction in which the
10 titanium reacts with silicon to form a titanium silicide layer that provides low resistance electrical contacts between the junction region and the silicon substrate. The contact structure further comprises a titanium nitride contact fill that is deposited in the contact opening and fills substantially the entire contact opening.

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